19 November 1965

MEMORANDUM FOR: Assistant for Plans & Development, NPIC

25X1 ATTENTION: [redacted]

THROUGH: Chief, Information Processing Division, NPIC

SUBJECT: FORTRAN Program Used in the Microdensitometer Study

1. I have reviewed and analyzed the FORTRAN program written to support this study. The program is ill defined and lacks substantiating information needed for an analyst to verify that the program would solve the problem. Specifically, any documentation to substantiate this program should include, besides the FORTRAN source language, a block diagram or flow chart, a definition of terms, the mathematical equations used, and the validity for using the specific techniques.

2. Fundamentally, the documentation is inaccurate. The sample data input and the results gained are not reflected when one analyzes the computer program. Professionally speaking the job is an extremely poor one. It does not represent a very sophisticated level of computer programming or analysis. The technique used for smoothing the data may or may not be correct. However, substantiated facts should be presented to argue for this particular method. For instance, the program ignores the first and last five data points. For a small sample used in their test case, this represents poor use of the limited data. The document speaks of a transfer function but there is no evidence of this in the program.

3. In summation, without more complete documentation and specific formats of input and output, it is difficult to accept the raw computer listing as sufficient evidence of competence.
25X1 Unless [redacted] can substantiate the above points, I would reject the program as meaningless.

[redacted] 25X1

Chief, Programming Branch, IPD

Distribution:
Orig. - Asst for P&D (Attn: [redacted] 25X1
2 - Ch/PRB/IPD

GROUP 1
Excluded from automatic downgrading and declassification

STUDY PROGRAM OBJECTIVE

Microdensitometer Study of the Effects of Processing on Edges

(PAR-211)

Problem

In order to properly evaluate the microdensitometric data obtained from mission material, it would be desirable to know the mutual effects emulsion type, printing and processing on the characteristics of image edges.

There is also the question of where the "true" edge lies when mensuration is involved. Mutual effects are also important here.

Proposal

The proposed means for attacking these problems are outlined below:

1. Edge Characteristics

Tests will be made to objectively measure the edge characteristics of the following typical combinations of film, printers, and processes:

Taking Film	Process	Duplicate Film	Process	Printer
4404	Trenton All Conditions*	8430	Dalton	Niagara
4400	Trenton All Conditions*	8430	Dalton	Niagara
4401	Trenton All Conditions*	5427	Dalton	Niagara

Other combinations will be measured as requested by the customer. The results will be tabulated in a report with a description of the test methods used to determine the characteristics.

2. Developer Composition

Developer composition is known to produce changes in the relative acutance-granularity characteristics of films. Typically, a developer which optimizes acutance (subjectively, sharpness) does so at the expense of granularity (subjectively, graininess), and vice versa. Many developers in use today are a compromise between these extremes.

The purpose of this study is to determine if this compromise optimizes the information content of high definition aerial photographs or if changes would further enhance the quality. The results of this study will serve as a guide for future development of film-developer systems.

* See next page

(a) Using a published developer formula with a fine grain aerial film, the composition will be varied to obtain three processes; one having high sharpness, one having low graininess, and one representing a compromise between the other two. Using the microdensitometer and other test equipment, objective measurements of the image characteristics will be determined.

(b) Practical aerial exposures at two scales will be processed through each developer composition and these tests will be subjectively evaluated by a number of trained photo interpreters to determine statistical preferences.

(c) The relationship between objective measurements and subjective evaluation will be analyzed and the results used as a guide for future improvements in films developer systems.

3. Mensuration Prints

(a) A survey will be made of the equipment, sensitized materials and processes now in use by the customer for producing mensuration prints. Information concerning the limitations and deficiencies of the present system will be sought, together with known requirements and desired improvements for a new system.

(b) Based on the information obtained in (a), a definite test plan will be established to study possible means of improving existing techniques.

Close liaison with the customer will be maintained throughout this study, and his facilities may be required for some testing.

"...all conditions..." The film receives a primary (spray) development and is then "read" by IR and IR-sensor to determine the density. The three "conditions" are:

(a) Heavily exposed negatives receive primary development only

(b) Average exposure negatives are then given an "intermediate" secondary development.

(c) Lightly exposed negatives are then given a "full" secondary development.

10 June 1965

Dear Willard:

Reference: Your letter dated 19 April 1965 concerning PAR 211 (Microdensitometer Study of Effects of Processing)

This is to submit the answers requested in the subject letter and confirm those given to you in our meeting of 25 May 1965.

1.a. The total estimated cost for preparation, reproduction and delivery of a final report [redacted] 25X1

b. The total estimated cost of the task including a. above is [redacted] 25X1

c. Delivery of the final report could be made six (6) weeks after approval to proceed.

2.a. Total estimated cost to stop work on charts 1, 2 and 3 and complete charts 4, 5, 6 and 7
25X1 is [redacted] including work already accomplished.

b. Total estimated cost to stop work on all 7 charts
25X1 is [redacted] for work already accomplished. The above estimates are made on the basis of averaging all charts at a cost of [redacted] per chart for PAR 237. 25X1

c. Delivery of charts 4, 5, 6 and 7 can be made with the first quantity of twenty (20) or more charts receiving approval under the scheduling conditions set forth in the briefing PAR.

Dick

Dick

RRW:eb
In Duplicate

cc: JP

8 June 1965

Memorandum For Record.

Subject: PAR-211, "Image Effect Study": Contract

[redacted]

25X1

It is requested that the Contractor be requested to complete and deliver the final report on this study. It is also requested that the contractor be requested to complete Charts 4, 5, 6 and 7.

25X1

[redacted]

SECRET

19 April 1965

25X1 [redacted]

Subject: PAR 211, Microdensitometer Study of Effects of Processing

Dear Rock,

It has been decided not to engage in the work proposed in the supplements numbers 1, 2 and 3 to this PAR. Therefore, it is requested that the following actions be taken:

1. Cease all work on Par 211 including the preparation of the interim report.

2. Prepare and furnish a cost estimate and firm delivery data for preparation, reproduction and delivery of a final report on results obtained from this study.

3. Prepare and furnish a cost estimate and firm delivery date for production and delivery of the four attached briefing aids. Charts 4, 5, 6 and 7 are to be changed as shown thereon; in chart no. 4 the word "aerial" is changed because it implies that the film has been exposed and processed. Charts numbers 1, 2 and 3 are not to be used and are therefore deleted.

Sincerely,

Wil

Attachments: Charts 4, 5, 6 & 7

Distribution:
Orig. + 1 - Addressee
1 - Project File
1- Marty
1 - Chrono/DB/P&DS
1 - [redacted] File

25X1
25X1
NPIC/P&DS/DB [redacted] 19 April 1965)

SECRET